

Customer No.: 31561
Application No.: 10/063,573
Docket No.: 08385-US-PA

REMARKS

Present Status of the Application

This is a full and timely response to the outstanding non-final Office Action mailed on August 13, 2003. Claims 1-40 remain pending of which claims 1, 5-7, 13-14, 19-21, 28, 35-36 have been amended and claim 34 has been canceled to more explicitly and more clearly describe the claimed invention. Claims 41-43 have been newly added. The specification has also been amended to correct typographical errors. It is believed that no new matter is added by way of these amendments made to the claims or specification or otherwise to the application.

The Applicants have most respectfully considered the remarks set forth in this Office Action. Regarding the obviousness rejections, it is however strongly believed that the cited references are deficient to adequately teach the claimed features as recited in the amended claims. The reasons that motivate the above position of the Applicants are discussed in detail hereafter, upon which reconsideration of the claims is most earnestly solicited.

Amendment to Specification

The specification has been amended to correct typographical errors, in which the term "reflow" had been mistakenly written as "reflux". Enclosed please also find a copy of the ESF

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specification, wherein the paragraph numbers may not correlate with the paragraph numbers of the ESF specification received by the Office.

Response to 35 U.S.C. 102 rejection

Claims 28-36 are rejected under 35 U.S.C. 102(c) as being anticipated by Fang (US 2003/0099767 A1).

To render a claim anticipated under 35 U.S.C. 102(e), the invention must be described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent. Since Fang of US 2003/0099767 A1 is one of the inventors of the instant application, Applicants respectfully submit that US 2003/0099767 A1 is not a proper prior art. Withdrawal of the rejection is courteously requested.

Claims 1, 2, 4, 6, 7, 10-16, 18-21, 24-29, 31, 32 and 34-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Hikita et al. (USP 6458609).

As described in detail hereinafter, Applicants respectfully submit that Hikita is legally deficient for the purpose of anticipating claim 1 and 28 because Hikita fails to disclose each element of the claim under consideration and arranged as in the claim.

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Hikita teaches forming a barrier metal 14c, 16d on the surface of the electrode pad 14a, 16a (col. 8, ln 1-5, Fig. 15-16). A bump 16b is then formed on the surface of the barrier metal 16d (col. 8, ln 6-12). The first conductor chip 14 and the second conductor chip 15 are stacked through an anisotropic conductive film 24 (col. 8, ln 49-52). Contrary to the Office's assertion, Hikita does not teach forming another barrier layer (14f) over the alleged adhesion layer (14e). Instead, the barrier layer (14f) is equivalent to the layer (14e) in another embodiment (col. 8, ln 13-21). Therefore, Hikita fails to teach the underball metallic layer is a composite layer that comprises at least three stacked material layers. Moreover, Hikita also fails to teach attaching a plurality of first solders to the under bump metallurgy of the one chip, and attaching a second solder block to the upper surface of each first solder block to form bumps on the one chip. Instead, Hikita simply teaches the IC main chip 14 and the IC sub-chip 16, each has bumps such that the bumps of one chip is abutted against of the bumps on another chip (col. 5, ln. 1-25).

Therefore, in view of the foregoing, Applicants contends that Hikita fails to disclose all the features of the method as claimed in claim of the present invention. Applicants therefore respectfully request the withdrawal of the rejection under 35 U.S.C. § 102(c) of claim 1 and 28 and claims 4-27 and 29-40 depending therefrom, respectively.

Claims 28 and 34-36 are rejected under 35 USC 102(e) as being anticipated by Mis et al. (US 2003/0057559 A1).

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Applicants respectfully submit that Mis is legally deficient for the purpose of anticipating claim 28 because Mis fails to disclose each element of the claim under consideration and arranged as in the claim. Contrary to the Office's assertion, Mis teaches forming the solder structures 35b' 35c' on the surfaces of the UMB structures 34b' and 34c' of a first integrated circuit structure 21', followed by attaching pads 43b', 43c' on another integrated circuit substrate 41' to the solder structures 35b', 35c' of the first integrated circuit structure 21'. Mis does not teach attaching a second solder block 35b', 35c' to the first solder structures 35b', 35c' on one chip. Instead, Mis teaches in paragraph 32 and Fig. 3A, that the solder structures 35b'' and 35c'' may first be provided on the pads of 43b'' and 43c' of the second integrated circuit substrate 41'', and then brought into alignment with respective UMB structures 34b'', 34c'' of the first integrated circuit structure 21''. Further, since Mis fails to teach a second solder block, there can not be any teaching of performing a reflow operation to transform one of the first solder block and one of the second solder block into a single integral solder bump.

For at least these reasons, Applicants contends that Mis fails to disclose all the features as claimed of the present invention. Applicants therefore respectfully request the withdrawal of the rejection under 35 U.S.C. § 102(e) of claim 28 and claims 34-36 depending therefrom.

Response to 35 U.S.C. 103 rejection

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Claims 1-9, 14-23 and 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mis et al. (US 2003/0057559 A1, Mia hereinafter) in view of Uzoh et al. (US 2003/0080431 A1).

Claims 1-9, 14-23 and 29-33 stand rejected under 35 U.S.C. 103(a) as purportedly being unpatentable over the US patent application 0057559 to Mis in view of US patent application to Uzoh. As described in detail hereinafter, Applicant respectfully asserts that Mis in view of Uzoh is legally deficient for the purpose of rendering claim 1 or 28 unpatentable for at least the reason that not every element of the claims was taught or suggested by cited reference such that the invention as a whole would have been obvious to one of ordinary skill in the art.

As discussed in the above, Mia fails to teach attaching a second solder block to the first solder structures or performing a reflow operation to transform one of the first solder block and one of the second solder block into a single integral solder bump. Similarly, Uzoh simply teaches a method and structure for electrodeposition and electroetching of a wafer. There is no explicit teaching or implicit suggestion in Uzoh that a second solder block attaching to a first solder structures or the first solder block and the second solder block are alloyed or transformed into a single integral solder bump.

For at least these reasons, Applicants respectfully assert that claims 1, 14 and 28 patentably define over Mia in view of Uzoh. Since claims 4-13, 15-27 and 29-33, 35-40 are dependent claims which further define the invention recited in claims 1, 14 and 28, respectively, Applicants

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respectfully assert that these claims also are in condition for allowance. Thus, reconsideration and withdrawal of this rejection are respectively requested.

Newly added claims

Applicants have added claims 41-43, which are written in dependent form, reciting the operation condition of the reflow operation, so as to limit further the claimed subject matter of the present invention. Therefore, it is submitted that claims 41-43 are in condition for allowance for the above reasons.

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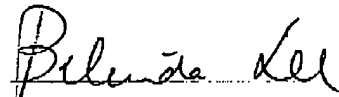
CONCLUSION

For at least the foregoing reasons, it is believed that the presently pending claims 1-33, 35-43 are in proper condition for allowance. If the Examiner believes that a telephonic conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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